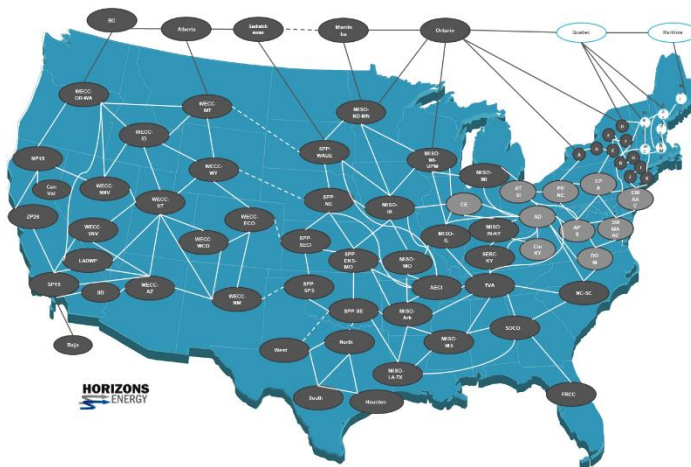


### Overview

- Forward-looking view of North American energy industry
- Fundamental analysis of the electricity markets: energy, fuel, capacity, renewable energy shadow prices and emissions pricing and ancillary services
- Integrated with related markets: fuels, emissions, transmission, demand and emerging technologies
- Forecast out to 2050 across nine scenarios
- Extensively researched, benchmarked and analyzed



### Applications

- Asset valuation to determine profitability of investment by developers, banks, investors
- Market intelligence for developers
- Environmental analysis for IOUs, market players
- Integrated resource planning by IOUs
- Public policy for governmental agencies, market participants

### Deliverables

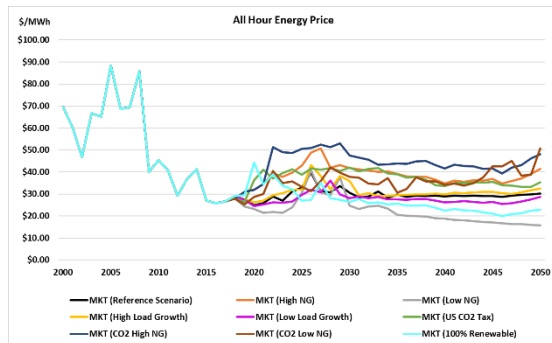
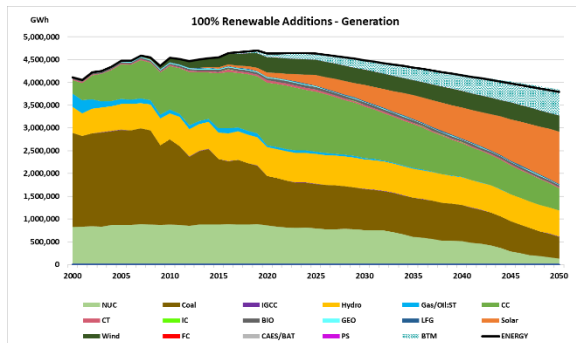
- **Forward-looking View** – Horizons Energy’s semi-annual report covers forecasts and analysis of 78 North American power markets. This document includes a Market Overview of both electricity and related markets. It contains assumptions for resource expansion as well as retirement options. Also, there are market break-outs for each of the 21 NERC Assessment Areas and a summary of the assumptions and results for the nine scenarios.

| Content               | Description   | Granularity                               |
|-----------------------|---|---|
| Evaluator™            | Interactive dashboard user-selectable that allows for evaluation of results for generation, energy and fuel prices, emissions, implied heat rate across 9 scenarios | Market area, assessment area, USA, Canada |
| Fuel Prices           | Daily Henry Hub, delivered natural gas, and oil, annual basin and delivered coal prices   | Market area                               |
| Energy Prices         | Annual and monthly on-, off-peak prices, all hours and 8,760 Solar and Wind Annual weighted prices  | Market area                               |
| Resources             | Individual units by fuel and technology type  | Market area, state, fuel delivery point   |
| Production Results    | Annual and monthly peak, available capacity, reserve margin, generation, average production and load weighted price (\$/MWh)  | Market area                               |
| Additions/Retirements | Summary of economic additions and retirements   | Market area, assessment area              |

## Value

Key advantages of the Horizon Advisory Service over the competition are results provided nationally for 30+ years in a single Excel workbook, interactive dashboard to review results, content delivered where average production cost can serve as an indicator of avoided energy cost.

- **No Short-cuts Here** - The entire North American database simulated at once. This critical requirement for capturing national and state policies (RPS, emissions), related markets (such as fuel) and system constraints.
- **Multiple Scenarios** –Our nine scenarios include a Base Case and eight variations of Natural Gas Price, Load Growth, CO<sub>2</sub> Policy, Renewable Technology Cost and Penetration.
- **Hourly Detail** – 8,760 hours per year to provide high-level time resolution for power operations.
- **Blended History and Forecast** - to create the Horizon Advisory Service we thoroughly backcast from the year 2000 to 2016 and forecast to 2050, allowing for a comprehensive understanding of markets, technologies and operations unique to each area.
- **Supply Chain Constraints** - dynamically captures costs associated with expanding resource technologies beyond available production capability.
- **Bid Behavior** – included to provide a better estimate of the value of scarcity and hourly/daily market price volatility.



## About Horizons Energy

Horizons Energy provides a broad array of consulting services and products to meet the needs of energy industry participants. To learn more contact [Horizons Energy](#).

### Powered By EnCompass

The Horizons Advisory Service utilizes the [EnCompass](#) power planning model provided by Anchor Power. EnCompass deploys a powerful mix-integer linear programming framework capable of representing long-term planning, portfolio optimization and both hourly and sub-hourly operations for zonal and nodal powerflows. By combining the Horizons North American database with the EnCompass simulation engine Horizons Energy derives *simultaneous price forecasts* of multiple markets including: energy, ancillary, capacity, environmental and REC's.

[Horizons Energy](#)